

Listing of the Claims showing Changes

1. (Currently Amended) A solder preform comprising:

a) a solder matrix comprised of a solder alloy forming the solder preform material;

5 b) microparticles embedded in the solder alloy material of the solder matrix; and

c) the microparticles being constructed so as to be capable of arranging during a solder bonding process so as to provide a substantially uniform separation between opposing

10 soldered surfaces.

2. (Canceled).

3. (Previously Amended) The solder preform of Claim 1 wherein the microparticles are shaped so as to inhibit stacking while self arranging during a solder bonding process.

15 4. (Currently Amended) The solder preform of Claim 1 comprising an amount of microparticles with respect to an amount of the solder alloy matrix so as to inhibit stacking of the microparticles during a solder bonding process.

20 5. (Original) The solder preform of Claim 4 wherein the microparticles are shaped so as to inhibit stacking while self arranging during a solder bonding process.

6. (Original) The solder preform of Claim 5 wherein the

microparticles comprise microspheres.

7. (Original) The solder preform of Claim 6 wherein the microparticles comprise at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal; (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

8. (Previously Amended) The solder preform of Claim 1 wherein the microparticles comprise at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal; (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

9. (Original) The solder preform of Claim 8 wherein the microparticles comprise generally regular particles.

10. (Original) The solder preform of Claim 9 wherein the microparticles comprise microspheres.

11. (Previously Amended) The solder preform of Claim 1 wherein the microparticles comprise as at least one of: (a) spheres, (b) polyhedrons; (c) crystalline particles, (d) powders, or (e) nanostructures.

20 12. (Currently Amended) The solder preform of Claim 1 wherein the microparticles have a coefficient of expansion such that a combined coefficient of expansion of the microparticles and the solder ~~material~~alloy is in a range between the opposing soldered surfaces.

13. (Currently Amended) The solder preform of Claim 1 wherein the microparticles have a coefficient of expansion lower than a coefficient of expansion of the solder ~~materialalloy~~.

5 14. (Currently Amended) The solder preform of Claim 1 wherein the microparticles have a coefficient of expansion higher than a coefficient of expansion of the solder ~~materialalloy~~.

10 15. (Currently Amended) The solder preform of Claim 1 wherein the microparticles have a coefficient of expansion substantially the same as a coefficient of expansion of the solder ~~materialalloy~~.

16. (Currently Amended) The solder preform of Claim 1 wherein the microparticles are distributed substantially uniformly through the solder ~~matrixalloy~~.

15 17. (Currently Amended) The solder preform of Claim 1 wherein the microparticles are embedded near an exterior surface of the solder ~~matrixalloy~~.

18. (Currently Amended) The solder preform of Claim 1 wherein the microparticles are embedded in an exterior surface of the solder ~~alloymaterial~~ of the solder matrix.

20 19. (Currently Amended) A solder preform comprising:

a) a solder matrix forming the solder preform, the
solder matrix comprising a solid solder alloymaterial; and

b) a plurality of microspheres having a substantially similar diameter embedded within the solid solder alloymaterial

~~of the solder matrix.~~

20. (Original) The solder preform of Claim 19 wherein the plurality of microspheres comprises microspheres comprising at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal;
5 (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

21. (Currently Amended) The solder preform of Claim 20 wherein the plurality of microspheres has a coefficient of expansion such that a combined coefficient of expansion of the plurality of microspheres and the solid solder alloy~~material~~ is in a range between the coefficients of expansion of the opposing soldered surfaces.
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22-44 (Canceled)

45. (New) A solder preform comprising:

15 a) a plurality of microparticles embedded within a non-paste solder matrix, the non-paste matrix forming the solder preform; and

20 b) the microparticles being constructed so as to be capable of arranging during a solder bonding process so as to provide substantially uniform separation between opposing soldered surfaces.

46. (New) The solder preform of Claim 45 wherein the microparticles are shaped so as to inhibit stacking while self arranging during a solder bonding process.

47. (New) The solder preform of Claim 45 comprising an amount of microparticles with respect to an amount of the non-paste solder matrix so as to inhibit stacking of the microparticles during a solder bonding process.

5 48. (New) The solder preform of Claim 47 wherein the microparticles are shaped so as to inhibit stacking while self arranging during a solder bonding process.

49. (New) The solder preform of Claim 48 wherein the microparticles comprise microspheres.

10 50. (New) The solder preform of Claim 49 wherein the microparticles comprise at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal; (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

15 51. (New) The solder preform of Claim 45 wherein the microparticles comprise at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal; (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

20 52. (New) The solder preform of Claim 51 wherein the microparticles comprise generally regular particles.

53. (New) The solder preform of Claim 52 wherein the microparticles comprise microspheres.

54. (New) The solder preform of Claim 45 wherein the microparticles comprise as at least one of: (a) spheres; (b)

polyhedrons; (c) crystalline particles, (d) powders, or (e) nanostructures.

5 55. (New) The solder preform of Claim 54 wherein the microparticles comprise at least one of: (a) polyhedrons; or (b) crystalline particles.

10 56. (New) The solder preform of Claim 45 wherein the microparticles have a coefficient of expansion such that a combined coefficient of expansion of the microparticles and the non-paste solder matrix is in a range between the opposing soldered surfaces.

15 57. (New) The solder preform of Claim 45 wherein the microparticles have a coefficient of expansion lower than a coefficient of expansion of the non-paste solder matrix.

20 58. (New) The solder preform of Claim 45 wherein the microparticles have a coefficient of expansion higher than a coefficient of expansion of the non-paste solder matrix.

20 59. (New) The solder preform of Claim 45 wherein the microparticles have a coefficient of expansion substantially the same as a coefficient of expansion of the non-paste solder matrix.

60. (New) The solder preform of Claim 45 wherein the microparticles are distributed substantially uniformly through the non-paste solder matrix.

61. (New) The solder preform of Claim 45 wherein the microparticles are embedded near an exterior surface of the non-paste solder matrix.

5 62. (New) The solder preform of Claim 45 wherein the microparticles are embedded in an exterior surface of the non-paste solder matrix.

10 63. (New) A solder preform comprising:

c) a non-paste solder matrix forming the solder preform; and

15 d) a plurality of microspheres having a substantially similar diameter embedded within the non-paste solder matrix.

15 64. (New) The solder preform of Claim 63 wherein the plurality of microspheres comprises microspheres comprising at least one of: (a) glass; (b) plastic; (c) elastomer; (d) metal; (e) semiconductor; (f) material capable of conducting electric current; or (g) dielectric material.

20 65. (New) The solder preform of Claim 64 wherein the plurality of microspheres has a coefficient of expansion such that a combined coefficient of expansion of the plurality of microspheres and the solder alloy is in a range between the coefficients of expansion of the opposing soldered surfaces.

66. (New) The solder preform of Claim 11 wherein the microparticles comprise at least one of : (a) polyhedrons; or (b) crystalline particles.